is supposed to live. Indeed, if oysters in general had only the locomotive powers of their brethren in the classical legend of the Walrus and the Carpenter, there is very little doubt that, in many cases, they would quickly move off in search of quarters more salubrious than those in which they are often compelled to exist.

It is not easy to indicate how the present condition of things may best be remedied. Oysters, of course, are not a necessity, unless to the hardly-driven brain worker, to persons of feeble digestion, or to convalescents. Unless something is done, therefore, to reassure the public mind—either by the collective action of the oyster breeders themselves, or by systematic inspection on the part of the State—the future of the industry will be seriously jeopardised. As it is, the "scare" has done very great damage to the trade, and the good and the bad alike have indiscriminately suffered. To the statesman who is concerned with the welfare of a littoral population from which the *personnel* of our navy and coast defences is largely recruited, the problem has even a wider and deeper significance. On every ground, therefore, the question calls for prompt remedial action.

At the conclusion of his report Dr. Bulstrode makes some reference to "green-bearded" or "green-finned" oysters. These oysters find but little favour in this country, although, as is well-known, they are much appreciated in France, and the "huîtres vertes" or "huîtres de Marennes" obtain a far higher price in the Paris market than the "huîtres blanches." This green colour, which is met with to a small extent in certain Essex oysters, has been the subject of repeated investigation during the last seventy years, notably by Gaillon (1820), Valenciennes (1841), and Puségur and Decaisne (1877). The last-named observers found that the green tint was due to the inclusion of a diatom—*Navicula ostrearia*, or, as it is now called, *N. fusiformis*, taken up from the "claires" in which the oysters are confined. These observations were confirmed and extended, in 1885, by Prof. Ray Lankester, who showed that a blue pigment, which he termed "Marennin" occurs in the *Navicula*, and is either "uniformly diffused throughout the cell protoplasm," or "confined to the ends of the elongated cell body" (Bulstrode). In the oyster the green colouring matter is localised on the surface of the gills and labial palps in "certain peculiar cells of the superficial epithelium." It is the deposition of this blue pigment (Marennin) in the yellowish brown gills which, according to Prof. Lankester, gives rise to the green appearance of the "huîtres de Marennes."

It has been often alleged that this greenness is due to copper, and as a matter of fact copper has frequently been detected in oysters since Bizio, in 1835, first discovered it in the organic substance of the mollusc. Dr. Bulstrode, from time to time, sent the writer of this notice oysters from different localities, and copper was uniformly found in them, although in the Marennes oysters it was present in minute amount only—far less, indeed, than in certain oysters of a normal colour. But there is no question that the greenness of certain oysters, especially of those found in Falmouth and Truro waters, is due to copper. The colour, both in character and distribution, is, however, quite different from that of the Marennes oyster. The green Cornish oyster is unsaleable in this country—at least for immediate consumption—as it leaves a distinct metallic taste in the mouth, similar, it is said, to that due to "sucking a penny." Dr. Bulstrode caused a number of such oysters to be sent to me at different times. On incineration under conditions which precluded the possibility of the introduction of copper, there was no difficulty in detecting the presence of that metal in the ash. Indeed, here and there in the ash were particles of Alexandrine or Egyptian blue, which, as Davy found long ago, is a *frit*. made by heating together soda, lime, sand, and copper. The amount of copper, on the average, was not more than about 0·02 grain per oyster, but as it is obviously caused by the mechanical retention of cupriferous particles, individual oysters might, and indeed did, contain large quantities. On examining the mud of the locality in which such green oysters occur, it was found to contain 0·148 per cent. of copper. On relaying, the green Cornish oyster gradually loses its colour, and also its metallic taste; specimens of such relaid oysters were found to contain only 0·0060 grains of copper per oyster, which is practically the same (viz. 0·062 grain), as that found in Whitstable oysters which had never been green. This amount would seem, therefore, to be normal to the oyster, and to be probably due to the presence of hæmocyanin, first found by Fredericq in the blood of the octopus, and since shown to be present also in many mollusca.

T. E. THORPE.

NOTES.

FOR the last three or four years we have been treated, in the copy of the *Times* appearing after the Anniversary Meeting of the Royal Society, to strictures of the action of the Council of that body. We have not thought it necessary to reply to these at length, because their origin was pretty well known, and the Royal Society is quite capable of taking care of itself. But this year we think the bounds of journalistic decorum have been passed in a leading article in which the regretted retirement of Lord Rayleigh from the Secretaryship is referred to. The *Times* states: "He has taken, . . . the unusual step of declining to sit on the Council, and no one who knows the play of forces within the Society can doubt that his refusal is significant." This sentence is obviously intended to suggest that Lord Rayleigh's resignation of the position which he has so long adorned, and in which his services have been so greatly valued, is due to a want of sympathy with his colleagues or to a want of respect for them. Lord Rayleigh is absent from England, but we believe that we know enough of the Royal Society and of Lord Rayleigh to warrant us in repelling at once, and, in his absence, the insinuation as unfounded, and as quite unworthy of the journal in which it has been allowed to appear.

AT the Royal Society's meeting, last week, the following were elected Foreign Members of the Society:—Prof. Albert Heim, of Zürich, geologist; Prof. Gabriel Lippmann, of Paris, physicist; Prof. Gösta Mittag-Leffler, of Stockholm, mathematician; and Prof. Giovanni Schiaparelli, Director of the Royal Astronomical Observatory of Brera, Milan.

WE announced some time ago the lamentable death of M. Tisserand, the distinguished Director of the Paris Observatory. The French Government, according to the invariable rule, at once applied to the Academy of Sciences, to nominate two men whom they considered qualified to succeed him. They selected M. Loewy and M. Callandreau, the first place being given to M. Loewy, a fully-trained astronomer, who has made his reputation along many lines of research, and who has for many years belonged to the staff of the Observatory. We learn that the Government has accepted this nomination, and that M. Loewy has been appointed Director in succession to M. Tisserand.

LORD RAYLEIGH and Prof. Ramsay have been elected Corresponding Members of the Berlin Academy of Sciences.

M. MICHEL LÉVY has been elected a member of the Section de Minéralogie of the Paris Academy of Sciences, in succession to the late M. Daubrée.

WE notice with much regret the announcement of the death of Dr. Benjamin A. Gould, the distinguished founder and editor of the *Astronomical Journal*.

DR. GILBERT W. CHILD, Lecturer on Botany in the Medical School of St. George's Hospital, and Public Examiner in the School of Natural Science, as well as for the M.D. degree at Oxford, died on Tuesday. The death is also announced of Mr. William Francis Ainsworth, known for his travels and researches in Asia Minor, Mesopotamia, &c.

THE new aquarium of New York City, in Castle Garden Building, of which mention was made in NATURE several months ago, will be opened to the public on December 15. The opening was delayed by the elaborate work of reconstructing the building.

THE total expense of the British Association meeting at Liverpool, defrayed from the local fund, was (it appears from the final report of the Local Committee) 2625*l.* The balance in the Treasurer's hands is about 980*l.*, which the Committee has decided shall be invested, and the income therefrom paid to the Liverpool Marine Biology Committee, for use in the publication of *Proceedings* and the prosecution of scientific research. This action ensures that the meeting will have a lasting effect upon local scientific research, as the fund will be made a trust, and the income only used annually in the Liverpool Marine Biology Committee's investigations.

WE learn that the work on the "Ancient Volcanoes of Britain," upon which Sir Archibald Geikie has been engaged for some years, is now all in type. It will form two large octavo volumes, and will be copiously illustrated. Among the illustrations are numerous reproductions of photographs, also of sketches by the author, representing the more interesting or important features in the old volcanoes of this country from the earliest geological periods to the last great eruptions in older Tertiary time. The work will be further accompanied by a series of maps showing the distribution of the volcanic rocks of each eruptive period. It will be published by Messrs. Macmillan and Co., and will probably appear early next year.

AT the fourth Congrès international de Zoology, to be held at Cambridge in September 1898, under the presidency of Sir William Flower, the prize of the Tsar Alexander III. will be awarded for the first time, and that of the Tsar Nicholas II. will be awarded for the second time. The subject to be treated in papers competing for the former prize is "The Ruminants of Central Asia, from the zoological and geographical point of view," and the latter prize will be for "An Anatomical and Zoological Monograph of a Group of Marine Invertebrates." The prizes consist either of a sum of money or a medal of equal value, at the choice of the successful competitors. Memoirs must be sent to the President of the Permanent Committee before May 1, 1898. All zoologists are eligible to compete, except those belonging to the country in which the Congress will be held. British zoologists are thus excluded.

THE British Chamber of Commerce at Alexandria have come to the unanimous conclusion that the adoption of the metric weights and measures in the United Kingdom would be of advantage to British traders in Egypt. Lord Cromer, in forwarding the report to the Foreign Office, remarks that a very general opinion undoubtedly exists in Egypt that British trade with that country would benefit by the adoption of the metric system of weights and measures, and adds that the compulsory introduction of the metric system was strongly urged upon the Egyptian Government some years ago, when it was held that so brusque a change was to be deprecated. On the Egyptian railways, however, and in fact wherever there are Government weighing machines, the metric system has been adopted, and it is hoped that it will thus gradually take root throughout Egypt.

WE learn from the *British Medical Journal* that, on the suggestion of Dr. Nicholson, Professor of Natural History at the University of Aberdeen, the Town Council of Aberdeen agreed some time ago to utilise part of the buildings of the old bathing station as a marine aquarium. The tanks have been made, and the further necessary fittings are in hand. In view of the great importance of the fishing trade at Aberdeen, further developments have been contemplated with regard to combining a department for fish hatching and culture on a scientific basis with the aquarium. It is to be expected that the investigations carried on in such an institution should prove of great interest and importance to the students of zoology at the University.

THE juvenile lectures at the Society of Arts will this year be given by Mr. Clinton T. Dent, past president of the Alpine Club. Mr. Dent has taken for his subject "The Growth and Demolition of Mountains." The lectures will deal mainly with the destructive agencies, weather, frost, glacier movements, avalanches, waterfalls, floods, &c. They will be delivered on January 6 and 13.

AN advertisement inviting applications for the position of Macleay Bacteriologist to the Linnean Society of New South Wales, Sydney, has lately appeared in NATURE. It may be of interest to state that the salary attached to the post arises from a sum of £12,000 bequeathed by Mr. William Macleay, whose total benefactions to science in New South Wales amounted to about £100,000. In making the appointment the object in view is entirely the advancement of natural knowledge by research, the Linnean Society not deriving any pecuniary benefit therefrom.

M. A. A. L. TRÉCUL, whose death, at the age of seventy-eight, we announced on November 5 (p. 11), was one of the highest authorities on vegetable organogeny. In addition to a monograph of the Artocarpaceæ, he had contributed, during a period extending over half a century, a very large number of papers on various points in the anatomy of plants to the French botanical journals. Among the subjects thus treated of are adventitious roots and buds; the increase in diameter of woody dicotyledons; the origin and development of the fibres of the xylem and phloem; the theory of the graft; the formation of leaves; secondary formations in vegetable cells; laticiferous vessels, &c. His latest observations, contributed to the *Comptes rendus* of the French Academy, were on the ultimate ramifications of the vascular bundles in leaves and petals.

ON Friday last, at a meeting of the full Committee formed to establish an international submarine telegraph memorial, the report of the Executive Committee was received and adopted. The following are the resolutions: (1) That a bust of the late Sir John Pender, at a cost not to exceed 500*l.*, be erected in the Imperial Institute or other suitable place; (2) that a sum of not less than 5000*l.* be placed in trust with the Council of University College, London, to form an endowment fund for the maintenance of the electrical laboratory in that College, on the condition that the Council name the laboratory the "Pender Laboratory," and the existing chair of Electrical Engineering the "Pender Chair of Electrical Engineering"; (3) to endow a scholarship, or a scholarship and medal, in connection with electricity at Glasgow. The Lord Provost of Edinburgh desired the word "Edinburgh" substituted for "Glasgow" in the third resolution. This was not done, but the Chairman (the

Marquis of Tweeddale) said, if the funds permitted, the claims of Edinburgh would probably be considered by the Committee. Subscriptions will be invited to carry out these resolutions.

DR. BAUMANN, whose death we announced last week, was professor of medical chemistry at the University of Freiburg in Baden. He was (says the *Lancet*) the son of a chemist, and served the full period of a pharmaceutical apprenticeship, after which he entered the Technical College of Stuttgart in order to complete his studies in chemistry, physics, and natural science. In Tübingen, where he went to take his diploma, the celebrated physiologist, Hoppe-Seyler, recognised the great talent of the young man, and not only made him his assistant, but when Prof. Hoppe-Seyler had been elected to the professorship at the University of Strassburg in Alsace, in 1872, Baumann accompanied him thither. In 1879 he was made director of the chemical department of the new Physiological Institute of Berlin, and in 1882 he became ordinary professor of medical chemistry in Freiburg, where he remained till his death on November 2. Prof. Baumann's work included researches on the subject of metabolism and on cystin. He was the discoverer of the specific action of sulphonal and trional, and also of the presence of iodine in the thyroid gland, this last being one of his latest and most notable achievements. He was only forty-nine years of age at the time of his death.

MR. S. STAINER sends us a further communication on his observations of swallows at Southampton, up to the end of November. He saw these birds on twelve separate days, from November 6 to November 25, the highest number (ten) occurring on November 12, and the lowest (one) on November 25. The weather for the first three weeks of last month was very mild, and it is suggested that during that period the insects upon which swallows feed were present in the air. The east wind, which prevailed during the last week of the month, may have so reduced the food supply as to force migration upon the birds.

AT the Royal Societies Club on Monday, Dr. John Murray, F.R.S., editor of the "*Challenger* Reports" and naturalist on the expedition, was presented by the contributors to the various sectional reports, with an album containing their portraits. The album is a very handsome volume bound in morocco, with illuminated address and dedication plate designed by Mr. Walter Crane. It contains eighty-six portraits. The *motif* of the design adopted for the cover is deep-sea and other animals collected by the expedition. The chair was taken by Sir Clements Markham, K.C.B., F.R.S. (President of the Club), and the presentation made by the Rev. T. R. R. Stebbing, F.R.S.

ALL who have attempted to determine a miscellaneous collection of fossils from any geological formation have soon discovered the difficulty of affixing correct names to all the specimens, and if they have been doing this work with the object of publishing some paper, either dealing with the stratigraphy of a district, or attempting to correlate geological horizons in different parts of the world, they have probably given the task up in despair. A few, no doubt, have been fortunate in possessing friends, whose knowledge of particular groups of fossils could be drawn upon. But it is not always that one knows the best person to apply to, or that one can be certain of a favourable reception. *Natural Science*, in its December number, has published a list of twenty-six specialists who are willing to determine various groups of fossils from various strata, when requested to do so for purposes of publication, and this enterprising action will doubtless be welcomed by many local geologists. We hope that this list is only a first instalment, for there certainly appears to be a large number of groups of fossils in which no one is prepared to pose as an authority. We should have thought that some one might have been found for the trilobites, the belemnites, or the palæozoic brachiopods. Obviously, if any one wishes to take up the study of some special division of palæontology, he need not be deterred by the lack of an opening.

THERE has recently been launched in France a novel kind of vessel, named the *Ernest Bazin*, after the name of the inventor. This vessel, which is only a large model, is intended to demonstrate the feasibility of driving steamers through the water at high speeds without increasing the engine power, and consequently the quantity of coal required beyond practical mercantile limits. The inventor considers that it is possible, with vessels designed on his principle, measuring between 400 and 500 feet in length, to realise, with a consumption of 800 tons of coal, a speed of thirty knots, which means that the voyage from this country to America could be accomplished in 100 hours. As a comparison with this, vessels of the type of the *Campania* use between 3000 and 4000 tons of coal to attain a speed of twenty-two knots, and if this speed were increased to thirty knots, there would be required for each voyage 70,000 tons. This result is to be attained by constructing the vessel on a series of large hollow wheels or rollers, which are to be made to revolve. In the model there are three rollers on each side, the vessel itself being carried on a framework resting on the axles of the rollers. The rolling motion of these wheels offers much less resistance in displacing the water than the propulsion of a fixed body through it. The rotation of the floating wheels has the effect of transforming fixed into moving elements, each point of which flies before the resistance of the water in proportion to the advance of the float, the resistance consequently becoming lessened. By experiments, M. Bazin has shown with small models that when a vessel, designed on his principle, is moved through the water with the rollers fixed, it will be brought up by an object of sufficient size floating on the water coming in contact with the rollers. Whereas, when the rollers are made to revolve, it will pass over the obstacle without loss of speed, the obstruction sinking in the water and returning to the surface after the roller has passed. The possibility of building a roller-ship has been practically demonstrated. It remains yet to be seen what the effect will be as to speed and other conditions.

IT is a popular idea that the seeds of many plants pass unharmed through the digestive canal of birds, and, being voided with the excrements, reach the ground in a peculiarly favourable condition for germination; and this is generally believed to be especially the case with the mistletoe, the seeds, in this case, being deposited on the branches of the tree on which the mistletoe is parasitic. In a paper contributed to the *Transactions* of the Linnean Society, Mr. F. W. Keeble shows that this is at all events not universally the case with the *Loranthaceæ*, especially with the Cingalese species of *Loranthus*. The species of this genus with tubular flowers which are natives of Ceylon are ornithophilous, the bird most effective in their pollination being a honey-bird, a species of *Nectarinia*. In the large-flowered species, the buds remain closed; but, when tapped, the corolla-lobes fly open with an explosion, and the pollen is scattered. The closing of the flower-buds appears to serve the purpose of protecting the pollen against rain, while the violent expulsion of the pollen aids in its carriage by the visiting birds, their beaks being frequently found to be covered with pollen after visiting the flowers. When the fruit is ripe, the bird eats the succulent portion only, wiping out the seeds with its beak on to a branch of the tree, to which they thus become attached by their viscid coating. If swallowed, the seeds are found to be digested and destroyed.

A valuable memoir by Prof. Augusto Righi, entitled "Sulla propagazione dell' elettricitá nei gas attraversati dai raggi di Röntgen," has just been published by Signori Gamberini é Parmeggiani, Bologna. Practically all the experimental work which has advanced the knowledge of Röntgen rays is brought together and coordinated in the memoir, full references to the original papers being given in each case.

The Cambridge University Press is about to issue a "Manual and Dictionary of the Phanerogams and Ferns," by Mr. J. C. Willis, Director of the Royal Botanic Gardens, Ceylon. The work is in two volumes, printed on thin paper, the second of which can be placed in the pocket as a handbook for ready reference in a botanic garden or museum. The first volume serves as an introduction to the second or dictionary part, and deals with the vegetable morphology, variation, and the principles of classification in a decidedly original manner. It considers plants largely from a biological standpoint, and attempts to indicate the effects of the environment on the organisms.

The *Annales* of the French Meteorological Office for 1894 have recently been published. They consist of three large quarto volumes: (1) Memoirs, containing a discussion of tracks of thunderstorms, magnetic observations at various places, with a summary of the principal disturbances, and a comparison of the curves with those furnished by the registration of earth-currents, showing the relation which exists between these phenomena; a discussion of the observations made on the Eiffel Tower, &c. (2) Observations made at French stations and in their colonies. (3) Rainfall values: the number of these stations is 2039, which exceeds those given in any previous year.

Chemical papers abound in the volume of *Proceedings* (vol. xxiii. new series, 1895-96) just issued by the American Academy of Arts and Sciences. We select for special mention the following subjects of contributions to the volume:—The composition of the Ohio and Canadian sulphur petroleums, by Charles F. Mabery; the chemical potential of the metals, by Wilder D. Bancroft. Among the conclusions are: (1) The potential difference between a metal and an electrolyte is not a function of the concentration of the salt solution, nor of the nature of the positive ion, except in certain special cases. (2) It is a function of the electrode, of the negative ion, and of the solvent; a revision of the atomic weight of zinc, by T. W. Richards and E. F. Rogers; (with O = 16 the atomic weight found is 65·404; with O = 15·96, the value is 65·240; and for O = 15·88, it is 64·912); thermo-electric interpolation formulæ, by Silas W. Holman; melting points of aluminium (660°), silver (970°), gold (1072°), copper (1095°), and platinum (1760°), by S. W. Holman, R. R. Lawrence, and L. Barr. The melting point of gold was assumed by the observers, and upon it the other values more or less depend. There are also papers on the thermal conductivity of mild steel, the outline of Cape Cod, and the embryology of the star-fish.

All chemists will welcome the appearance of a new instalment (part 2 of vol. ii.) of the "Lehrbuch du Organischen Chemie," by V. Meyer and P. Jacobson, which has just been issued. The new part deals with the aromatic phenols, quinones, aldelydes, ketones, and carboxylic acids. With the next part, the second volume, which deals with the chemistry of carbon rings, will be completed.

Mr. Crookes has been experimenting with a solution of ucium nitrate, and a larger quantity of precipitated oxalate, both supplied by M. P. Barrière, the patentee of the alleged new element, lucium. In the *Chemical News* he describes his experiments, and states that the results have convinced him that the claim of lucium to form one of the chemical elements is not justified. Chemical examination confirms the results obtained by spectrum observations, that lucium is nothing but impure yttrium.

In the current number of the *Zeitschrift für Physikalische Chemie*, H. Euler gives the results of a series of measurements of the electrolytic dissociation of some organic acids at different temperatures. On warming a solution of benzoic acid the ionisation—*i.e.* the fraction existing in the form of ions—increases until 35° C. is reached, after which it decreases, showing that the heat evolved by the change of the undissociated molecule into the ionic condition is negative at temperatures lower than 35°, and positive at higher temperatures. *m*-Oxybenzoic acid also has a maximum ionisation between 25° and 30°. In general the ionisation either increases or decreases continuously as the temperature is raised. These results are of interest in view of the belief, which is not unfrequently met with, that the ionisation necessarily increases with rise of temperature.

The additions to the Zoological Society's Gardens during the past week include a Leopard (*Felis pardus*, ♀) from Ceylon, presented by Surgeon-Major N. Manders; two Tigers (*Felis tigris*, ♂ ♂) from India, presented by Captain Alex. W. Thornycroft, Royal Scots Fusiliers; a Malabar Squirrel (*Sciurus maximus*) from India, presented by Mr. G. W. Vidal; a Ring-tailed Coati (*Nasua rufa*), a —— Courlau (*Aramus*, sp. inc.), a King Vulture (*Gypagus papa*), three Violaceous Night Herons (*Nycticorax violaceus*) from South America, an Impeyan Monaul (*Lophophorus impeyanus*) from the Himalaya Mountains, purchased.

OUR ASTRONOMICAL COLUMN.

Ephemeris for Comet Perrine.—The following positions for Perrine's comet have been computed by Otto Knopf, and are given in *Edinburgh Circular*, No. 51:—

Ephemeris for Berlin Midnight.

1896.	R.A. h.	m.	s.	Decl. °	′	Brightness.
Dec. 4	19	52	8	+4	42·7	0·99
5	19	51	49	4	14·7	
6	19	51	31	3	47·2	1·00
7	19	51	14	3	20·2	
8	19	50	59	2	53·6	
9	19	50	44	2	27·5	
10	19	50	31	2	1·8	1·01
11	19	50	19	1	36·5	
12	19	50	7	1	11·6	
13	19	49	57	0	47·1	
14	19	49	47	+0	23·0	1·04

The brightness of this comet on November 2 has been taken as unity.

"The Astrophysical Journal."—Among the articles of this journal for the present month may be noted Mr. W. J. Humphrey's further study of the effect of wave-lengths of lines in the arc spectra of certain elements. In this investigation he has examined the lines of several other elements, the best out of one hundred and seventy-five negatives having been employed. The new facts thus gleaned have necessitated a modification of his previous statement concerning the connection between the atomic weights and the shift of the lines. Prof. J. Fényi communicates a statement with two diagrams of the positions of the prominences on the solar limb at the time of the recent eclipse on August 8. Mr. Alexander Roberts, commenting on the growing importance of the value of the light ratio, adds some notes on a method of determining this quantity. Mr. Wadsworth, in continuation of the series of articles that has been given on "The Modern Spectroscope," describes an ingenious fluid prism without solid walls, and its use in an objective spectroscope. The general idea of the arrangement may be summarised quite briefly. A Littrow spectroscope has its axis of rotation arranged horizontally. The collimating beam from the slit falls on a free horizontal surface of a liquid contained in a glass or metal cell, and is there refracted. A mirror, also movable about the same axis, is immersed in the liquid at such an angle that it receives